Testimonials

IN FAVOUR OF

CARGILL GILSTON KNOTT,

D.Sc., F.R.S.E.,

ASSISTANT TO THE PROFESSOR OF NATURAL PHILOSOPHY,
UNIVERSITY OF EDINBURGH;

CANDIDATE

FOR THE

PROFESSORSHIP OF MATHEMATICS AND NATURAL PHILOSOPHY,

UNIVERSITY COLLEGE,

DUNDEE.

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UNIVERSITY COLLEGE,

DUNDEE.

92044

TO THE

MEMBERS OF COUNCIL

OF THE

University College, Dundee.

GENTLEMEN,

I beg to offer myself as a Candidate for the Chair of Mathematics and Natural Philosophy, University College, Dundee.

In November of 1872 I began a regular course of scientific study at the University of Edinburgh, devoting my attention mainly to Mathematics, pure and applied, and to the allied branch of Experimental Physics. In 1876 I graduated Bachelor of Science in the department of the Mathematical Sciences; and in 1879 obtained my Doctorate, after having presented an original Thesis on Contact Electricity, and undergone examination in the higher reaches of both Mathematics and Physics.

During these years I worked in Professor Tait's Laboratory—chiefly at Thermo-electricity and Electric and Thermal Conduction. In this connection I gained in 1877 the Neil Arnott Scholarship; and as holder thereof became assistant in the laboratory, instructing the junior students, and superintending them in their work. In the spring of 1878, during the indisposition of the Physics Master in Clifton College, Bristol, I acted as interim teacher.

In November of 1879, immediately after completing my degree, I was chosen by Professor Tait to the then vacant post of University Assistant to the Natural Philosophy Chair. In that capacity I have superintended the work of the laboratory students for the last three years, have given systematic courses of lectures on Experimental Physics during the summer sessions, and have besides aided the Professor in the teaching and examining of the general winter classes. Also, during the session 1879–80, I had charge of a large class on Physical Astronomy in connection with the Edinburgh Association for the University Education of Women.

As a writer on scientific subjects I have had considerable experience, having been entrusted with the entire charge of the Mathematical and Physical articles in the *Globe Encyclopædia;* and more recently I have contributed to the *Encyclopædia Britannica* several articles of a scientific bearing,—*e.g.*, ICE in the twelfth volume.

I subjoin a list of Papers written either wholly by myself or in conjunction with others, and offer for your consideration testimonials from eminent men in Science and Literature, who from their personal knowledge can testify as to my fitness for the post.

Should I have the honour to be elected, I shall make it my constant desire and endeavour, both as teacher and investigator, to further the highest interests of the College.

I have the honour to be,

GENTLEMEN,

Your obedient Servant,

CARGILL GILSTON KNOTT.

UNIVERSITY OF EDINBURGH,
July 1882.

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ON THE VARIATION WITH TEMPERATURE OF THE ELECTRICAL RESISTANCE OF WIRES OF CERTAIN ALLOYS. By Professor J. G. MACGREGOR, D.Sc., and C. G. KNOTT, D.Sc. (Vol. xxix. p. 599, 1880.)

RESEARCHES ON CONTACT ELECTRICITY. By C. G. KNOTT, D.Sc. (Vol. xxx. p. 271, 1882.)

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Published in the Proceedings of the Royal Society of Edinburgh.

ON THE EFFECT OF HEATING ONE POLE OF A MAGNET, THE OTHER BEING KEPT AT A CONSTANT TEMPERATURE. By D. H. MARSHALL, M.A., and C. G. KNOTT. (1872–73.)

ON THE APPLICATION OF ANGSTRÖM'S METHOD TO THE CONDUCTIVITY OF WOOD. By C. G. KNOTT and A. MACFARLANE. (18747–5.)

PRELIMINARY EXPERIMENTS ON THE THERMAL CONDUCTIVITY OF SOME DIELECTRICS. By C. M. Smith and C. G. Knott. (1874–75.)

ON THE THERMO-ELECTRIC PROPERTIES OF COBALT. By C. G. Knott, J. G. MacGregor, and C. M. Smith. (1875–76.)

THERMAL CONDUCTIVITY OF GAS COKE. By C. G. Knott and A. Macfarlane. (1876–77.)

PRELIMINARY EXPERIMENTS ON THE CURRENTS PRODUCED BY CONTACT OF WIRES OF THE SAME METAL AT DIFFERENT TEMPERATURES. By C. G. Knott and A. Macfarlane. (1876–77.)

RESEARCHES ON CONTACT ELECTRICITY (ABSTRACT). By C. G. Knott, D.Sc. (1879–80.)

TESTIMONIALS.

I.—*From* P. G. TAIT, Esq., M.A., Sec. R.S.E. ; *late Fellow of St. Peter's College, Cambridge; Professor of Natural Philosophy in the University of Edinburgh.*

COLLEGE, EDINBURGH,
7th June 1882.

I have known Dr. C. G. Knott for several years, and can testify that he highly distinguished himself in almost all the purely scientific courses in this University ; while he finally obtained his Doctorate in the department of Mathematics.

He has been my Class Assistant for the last three Sessions :—and in that capacity has given courses of lectures, looked over examination papers, and superintended the practical class in the laboratory, to my entire satisfaction.

He is an excellent lecturer, and a careful and just examiner.

He has given me most valuable assistance in several experimental inquiries, especially in a very protracted examination of the Thermo-electric properties of various metals.

His graduation thesis, "On Contact Electricity," which is based on original experiments, has been printed in the *Transactions of the Royal Society of Edinburgh.*

Of his knowledge of Mathematics, at least as regards two branches of that great subject, I happen to be able to speak in high terms. For (1) he selected Quaternions as one of the special subjects of examination for his Doctorate, and I took part in that portion of the examination:—and (2) he has given me much assistance in preparing the forthcoming edition of *Tait and Steele's Dynamics.*

I therefore consider him to be, in all respects, well qualified to teach, in a thoroughly sound manner, the courses of Mathematics and Physics which will probably be required in the Dundee College.

P. G. TAIT.

II.—*From* GEORGE CHRYSTAL, Esq., B.A., F.R.S.E.; *Professor of Mathematics in the University of Edinburgh.*

5 BELGRAVE CRESCENT, EDINBURGH,
9th June 1882.

I have much pleasure in giving my testimony to the abilities of Mr. C. G. Knott.

I examined him for the degree of Doctor of Science in the upper branches of Mathematical Physics, and in the Quaternion Calculus. I was well pleased with his knowledge of both these subjects, and was particularly struck with the hold he had over the Quaternion methods, which, from their peculiar directness, are eminently fitted to put a student's mathematical powers to the test.

From what I know of Mr. Knott otherwise, as a scientific worker, experienced both under the direction of my colleague Professor Tait, and independently, I have every reason to believe that he would efficiently fill a chair of Experimental Physics.

G. CHRYSTAL.

III.—*From* JOHN G. M'KENDRICK, Esq., M.D., LL.D., F.R.S.E., F.R.C.P.E. ; *Professor of Physiology in the University of Glasgow, and Fullerian Professor of Physiology in the Royal Institution of Great Britain.*

PHYSIOLOGICAL LABORATORY,
UNIVERSITY OF GLASGOW, *7th June 1882.*

I have much pleasure in stating that Dr. Knott has had such a training in Mathematical and Physical Science in the University of Edinburgh, and has acquired such experience as Assistant to Professor Tait, as to fit him in an eminent degree for the post of Professor of Natural Philosophy and Mathematics in University College, Dundee. I have had opportunities of judging of Dr. Knott's powers of communicating knowledge, and can testify that these are of a high order. He has written numerous articles on physical subjects for the *Globe Encyclopædia*, which are models of accuracy and of terseness, and in addition he has done far higher service by original work in Professor Tait's laboratory. He is a man of much promise, with a clear head and worthy aims, and he is likely, I believe, not only to be a good teacher but to aid in scientific research.

JOHN G. M'KENDRICK.

IV.—*From* Rev. JOHN PERCIVAL, M.A.; *President of Trinity College, Oxford.*

TRINITY COLLEGE, OXFORD,
3rd June 1882.

GENTLEMEN,—Dr. C. G. Knott of the University of Edinburgh, being a candidate for your Physics Professorship, has asked me to give my testimony in his favour My acquaintance with Dr. Knott is but slight; it is, however, sufficient to enable me to say that I think him a very good candidate for such a post. During my headmastership at Clifton College, when Dr. Macgregor, my Physics lecturer, was ill, Dr. Knott undertook his work for some time. He came to us at a moment's notice, and had to take up courses of lectures already begun, and also to carry on Laboratory Instruction in the Physical Laboratory, so that the test was a severe one, and it is due to Dr. Knott to say that he managed everything very satisfactorily, succeeding both as a teacher and a disciplinarian.

I have the honour to remain,

GENTLEMEN,

Your obedient Servant,

J. PERCIVAL.

V.—*From* JOHN HUTTON BALFOUR, Esq., A.M., M.D., LL.D. Edin. and Glasgow, F.R.S., and late Sec. R.S.E.; *Emeritus Professor of Medicine and Botany, and late Dean of the Faculty of Medicine, in the University of Edinburgh.*

INVERLEITH HOUSE,
EDINBURGH, *3rd June 1882.*

Dr. Cargill G. Knott is a distinguished Doctor of the Sciences of the University of Edinburgh, and I have much pleasure in recommending him as highly qualified for the Chair of Physics and Mathematics at University College, Dundee. I am sure that he will discharge the duties of the chair in a most satisfactory manner.

J. H. BALFOUR.

VI.—*From* ARCHD. GEIKIE, Esq., LL.D., F.R.S.; *Director-General of the Geological Survey of the United Kingdom, late Professor of Geology and Mineralogy in the University of Edinburgh.*

28 JERMYN STREET, LONDON,
5th June 1882.

Dr. Knott attended the Class of Geology and Mineralogy in the University of Edinburgh, and was one of the ablest students of his year. During the Field Examinations and other practical work of the Class, I had opportunities of observing how thoroughly he had the spirit of scientific inquiry, and how wide already was his range of knowledge. Since he left College I have been in frequent communication with him on various scientific subjects, and I know that he has been a more diligent worker than ever. He has made a series of valuable original researches, which, communicated to the Royal Society of Edinburgh, and published by it, show his remarkable power as an investigator. He has had also constant practice as a teacher for some years past, and has conducted his classes with marked success. I am confident that he will attain high rank as an expositor of the science to which he has devoted himself with so much enthusiasm.

ARCHD. GEIKIE.

VII.—*From* JOHN M. ROSS, Esq., LL.D.; *Senior Master of English Language and Literature, Royal High School, Edinburgh; and Editor of the "Globe Encyclopædia."*

30 GREAT KING STREET,
EDINBURGH, *3rd June 1882.*

DEAR DR. KNOTT,—I very gladly bear testimony to your fitness for the Chair of Natural Philosophy and Mathematics in University College, Dundee. The great distinction you attained as a scientific student at Edinburgh University, is attested by your Class Honours, and will be referred to by Professors, whose praise is fame. Nothing that I could say on such a point could add weight to the opinion of experts. But I may perhaps be allowed to state what comes within my own knowledge. As one of the staff entrusted with the conduct of the *Globe Encyclopædia*, you had entire charge of the departments of Mathematics and Experimental Physics, and nothing could surpass your clear, terse, and comprehensive exposition of the principles and applications of mathematical science. Such articles as "Electricity" prove that you are familiar with the results of the most recent investigations, and no small share of the popularity and success of the work to which I refer is due to your own valuable contributions, which have on several occasions elicited the warmest commendations from scientific journals. Of late you have furnished evidence that you have the talent required for independent and original investigation, while your present distinguished position as University Assistant in Natural Philosophy has given you a familiarity with the work, both of the laboratory and the lecture room, which must prove an admirable training for the career of a scientific teacher. It is, in my judgment, an additional qualification for an academic post, that you are a good French and German scholar, and a man of liberal culture generally.

JOHN M. ROSS.

VIII.—*From* WILLIAM CARRUTHERS, Esq., F.R.S. ; *Keeper of Botany, British Museum, London.*

CROMWELL ROAD,
SOUTH KENSINGTON, S.W.,
15th June 1882.

Having known Dr. Cargill G. Knott from his earliest years, I am able to testify that he has always been distinguished for his upright Christian character and his gentlemanly behaviour.

He had a strong natural bias to mathematical studies, and has specially devoted himself to them. He has been a diligent and very successful student, and has become a careful original investigator, as the important published memoirs of which he is sole or joint-author amply testify.

He has had, in connection with the University of Edinburgh, and under the guidance of Professor Tait, the best opportunities for fitting himself for the work of teaching physical science. His experience of oral teaching in the class room, and of practical teaching in the laboratory, has specially prepared him for professorial work.

I am convinced that he would occupy with credit to himself and to the Institution the Chair of Mathematics and Natural Philosophy in University College, Dundee.

WILLIAM CARRUTHERS.

IX.—*From* S. S. LAURIE, Esq., M.A.; *Professor of Institutes and History of Education in University of Edinburgh.*

UNIVERSITY, EDINBURGH,
5th June 1882.

I am not competent to speak of Dr. Knott's scientific acquirements, but I can with confidence say that they are highly esteemed in the University of Edinburgh. Personally, I have been brought into contact with Dr. Knott in connection with the University Examinations, and I can testify that, as an examiner, he is prompt, accurate, obliging, and in every respect highly competent. As a Physicist he is not content with being thoroughly equipped with the knowledge of the time, but is himself an assiduous investigator. I also know directly that he is very highly esteemed by the Students of Science in the University. He is looked up to by them as a Master in his Department, and gratefully recognised as an ever ready friend and helper. He would be a great acquisition in any College of Science.

S. S. LAURIE.

X.—*From* A. Crum Brown, Esq., M.D., D.Sc., F.R.SS. L. and E.; *Professor of Chemistry in the University of Edinburgh.*

8 Belgrave Crescent,
Edinburgh, *5th June 1882.*

I have much pleasure in expressing the very favourable opinion I have formed of the abilities and attainments of Dr. C. G. Knott, and of his fitness for a Chair of Mathematics or of Experimental Physics. I have seen a great deal of Dr. Knott, both as a student and as assistant to Professor Tait, and feel sure that he has the knowledge and the zeal, and the power of communicating them both, which form the best equipment of a professor.

ALEX. CRUM BROWN.

XI.—*From* ALEXANDER BUCHAN, Esq., M.A.; *Curator of Library of Royal Society of Edinburgh; Foreign Member of Royal Society of Sciences of Upsala; and Secretary of the Scottish Meteorological Society.*

SCOTTISH METEOROLOGICAL SOCIETY,
ALBERT BUILDINGS, 6 SHANDWICK PLACE,
EDINBURGH, *8th June 1882.*

I have much pleasure in testifying to Dr. Knott's qualifications for the Chair of Mathematics and Physics in University College, Dundee.

Dr. Knott had scarcely completed a distinguished course of study at the Edinburgh University, when he entered on the higher course of scientific research in Professor Tait's laboratory, which he has since continued steadily to prosecute. The excellence of the work he has done in this direction is attested by the fact that the results of his researches have had the honour of publication in the *Transactions of the Royal Society of Edinburgh.* He has, besides, made valuable contributions to other scientific publications. He has also cultivated, with success, various departments of Mathematics and Physics in their practical applications, among which may be mentioned some of the practical questions in Meteorology.

As University Assistant to the Chair of Natural Philosophy, he has had the invaluable experience of a practical training in the business of a Professor, which has included the delivery of courses of lectures to large classes of students.

These qualifications, together with a happy sympathy with young men and their work, and a downright enthusiasm for his subject, give me the greatest confidence in most heartily recommending him for the Chair he is now applying for.

ALEXANDER BUCHAN.

XII.—*From* D. H. Marshall, M.A., F.R.S.E.; *late Professor of Mathematics and of Natural Philosophy in the Imperial College of Engineering, Tokio, Japan.*

Edinburgh,
15th July 1882.

Dear Dr. Knott,—It is with great pleasure that I comply with your request to testify formally my acquaintance with you, and of the scientific work in which you have been engaged. I first made your acquaintance ten years ago, when you entered the Physical Laboratory of Edinburgh University as a student, and, as I was at that time Assistant to the Professor of Natural Philosophy, I had the very best opportunity in the execution of my duties of observing your zeal in physical research. Your great ability is best proved by the University Honours you have taken since that time, and the scientific work in which you have been engaged. For four years you have been assisting Professor Tait, and no work could be better to fit you for a Professorship of Mathematics or Natural Philosophy to which you aspire. Since my return from Japan, my leisure time has been largely occupied in Professor Tait's laboratory, and I have thus had a good opportunity of observing your popularity amongst the students.

D. H. MARSHALL.

XIII.—*From* Miss LOUISA STEVENSON, *Hon. Secretary, Edinburgh Association for the University Education of Women.*

EDINBURGH ASSOCIATION FOR
THE UNIVERSITY EDUCATION OF WOMEN,
15th July 1882.

DEAR SIR,—On behalf of the Executive Committee of this Association, I have much pleasure in stating that the Course of Lectures on Physical Astronomy which was given by you at 15 Shandwick Place during the Session 1879-80, gave much satisfaction both to the students attending the lectures and to the Committee.

LOUISA STEVENSON.

XIV.—*From the* Rev. W. ROBERTSON SMITH, D.D.; *Co-Editor "Encyclopædia Britannica."*

EDINBURGH,
2nd August 1882.

I have much pleasure in stating that Dr. Knott has for some time been a contributor to the *Encyclopædia Britannica* on Scientific Subjects, chiefly Scientific Biography. His work has always been good and thorough, and bears witness to wide and careful reading in original sources,—a very important qualification for the scientific teacher.

WM. ROBERTSON SMITH.

XV.—*From* STUDENTS *in the Physical Laboratory, University of Edinburgh.*

July 1882.

DEAR DR. KNOTT,—We, the undersigned past and present pupils in the Physical Laboratory of Edinburgh University, having heard that you are about to become a candidate for the Chair of Mathematics and Physics in the new University College, Dundee, wish to testify to our strong belief in your fitness for such a chair. Your mathematical and physical knowledge is well known to be wide, and a long laboratory training has made you specially apt in practical teaching. We wish particularly to express to you our sincere gratitude for the many benefits which we have derived from your supervision of our studies. Allow us also to record our high appreciation of the kind and gentlemanly manner in which you ever bore yourself towards us, being always ready to solve any difficulty that we had and to stimulate to further exertion. For any regard for scientific knowledge that we have formed, we feel that we are greatly indebted to you, and we have benefited much by our intercourse with you as being one who has already attained much in this way. All of us who have attended your lectures have derived much aid from the ability and clearness with which you treated your subjects. To not a few amongst us you have also been a genial friend. We are convinced that you possess all the qualifications necessary to the satisfactory discharge of the duties of the post for which you are a candidate, and we ask you to accept of our sincere wishes for the success of your candidature.

JOHN T. MORRISON, Vans Dunlop Scholar in Natural Philosophy, Neil Arnott Scholar (1880–81).
WILLIAM PEDDIE, Neil Arnott Scholar.
GEORGE N. STEWART, Neil Arnott Scholar (1879–80).

Charles L. Blaikie.
Cosmo I. Burton.
Albert Campbell.
W. Henry Cowan.
Kenneth M. Douglas.
John Holliday.
W. E. Home, B.Sc.
Nathaniel Leask, M.A.
Harvey Littlejohn.
John M'Kean, M.A.
Henry J. Mackenzie.
F. W. Marshall, Lieut. 2nd K.O.B.
William Marshall.
Alan L. Menzies.
James Middlemass.
Hugh Robert Mill.
J. Oswald Morrison.
Henry A. Moss.
Alfred A. Murray.
R. T. Omond.
Cecil Reddie, B.Sc.
A. C. Renton.
David Rintoul, M.A.
J. Morton Ritchie.
William Roger.
J. R. Roxburgh.
Kirthee Roy Singh.
James Smieton, M.A.
A. J. Stanton, B.Sc.
C. Hunter Stewart, B.Sc., Hope Prize Scholar (1881–82).
John E. Vernon.
John Waddell, B.A.
Andrew B. Wann, M.A.
Adam Young, M.A.

Testimonials obtained on a former Occasion.

From the Rev. PHILIP KELLAND, M.A., F.R.S., and V.P.R.S.E.; *late Fellow of Queen's College, Cambridge, and late Professor of Mathematics in the University of Edinburgh.*

20 CLARENDON CRESCENT,
EDINBURGH, *27th August 1877.*

Mr. Cargill G. Knott informs me that he is a candidate for the vacant Lectureship in Mathematics and Applied Mechanics at University College, Bristol.

My opinion of Mr. Knott is that he is just the kind of man likely to succeed in such an appointment.

From the time of the commencement of his studies in the University to the present, he has steadily devoted himself to Science. He attended my Classes in 1872–3 and 1873–4, and obtained the Medal in the Senior Class. He then applied himself to Experimental Science, working steadily in the Natural Philosophy Laboratory. In 1875 he passed examinations which entitle to graduation as Master of Arts with First-Class Mathematical Honours, and graduated B.Sc. in 1876. His work as a student has been of the most satisfactory kind. But he has not stopped there. He has devoted himself to original investigations. As one of the Vice-Presidents of the Royal Society of Edinburgh, it has been my good fortune to hear his name associated with many original investigations, in papers on—" Thermo-

Electric Science "—on the "Conduction of Heat in Wood," &c.—on the "Variation of Magnetism with Temperature"—and kindred subjects.

Some of his fellow-workers are occupying honourable positions in the scientific world :—Mr. Smith as Professor in Madras, Mr. Marshall as Professor in Japan, and I trust to have the happiness of seeing Mr. Knott, who is not a whit less worthy, occupying an equally important position. I am persuaded he would do credit to the College should the lectureship be conferred on him.

PHILIP KELLAND.

From Sir C. WYVILLE THOMSON, F.R.S., V.P.R.S.E.; *late Regius Professor of Natural History in the University of Edinburgh.*

BONSYDE, LINLITHGOW, N.B.,
4th June 1881.

Dr. Cargill G. Knott has successfully prosecuted Physics as a special study, and he has communicated several original papers to the Royal Society of Edinburgh, which have been published in its *Transactions* and *Proceedings*. I have reason to know that Dr. Knott is an able and conscientious teacher, and I should consider him in every way suited for the appointment which he desires.

C. WYVILLE THOMSON.

From FORMER STUDENTS *of the Physical Laboratory of the University of Edinburgh.*

August 1877.

To CARGILL G. KNOTT, Esq., B.Sc.

SIR,—We, former Students of the Physical Laboratory of Edinburgh University, having heard that you are a candidate for the Lectureship in Mathematics and Applied Mechanics, in University College, Bristol, desire to express our opinion as to your fitness for such an appointment. Through long association with you in Laboratory work, we have had ample opportunity of forming a judgment of your abilities, and we beg leave to say that, in our opinion, you are well qualified for the office. Your knowledge of Mathematics is extensive and accurate, and your power of teaching younger men has been made clearly evident in your discharge of the duties of the Neil Arnott Scholarship. That your knowledge of Physics is also thorough is proved, not only by your articles on " Electricity," " Energy," " Heat," " Hydrodynamics," &c., which have been published in the *Globe Encyclopædia*, but also by the original work which you have done in this Department. Your mastery of both Mathematics and Physics is sufficent to ensure success in the teaching of the subjects which we hope will be committed to your charge in University College

P. R. SCOTT LANG, M.A., B.Sc., Assistant to the Professor of Natural Philosophy in the University of Edinburgh.[1]

J. GORDON MACGREGOR, M.A., D.Sc., Lecturer on Physics, Clifton College ; Late Lecturer on Physics, Dalhousie College, Halifax, N.S.[2]

J. A. EWING, Lecturer on Engineering in the Watt Institution and School of Arts, Edinburgh.[3]

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[1] Now Professor of Mathematics in the University of St. Andrews.

[2] Now Professor of Physics, Dalhousie College, Halifax, Nova Scotia.

[3] Now Professor of Engineering, Imperial College, Tokio, Japan.

C. Michie Smith, B.Sc., Professor of Physical Science, Madras Christian College.

R. M. Morrison, D.Sc., F.R.S.E., Senior Demonstrator of Chemistry in the University of Edinburgh.

Alexander Macfarlane, M.A., B.Sc., Maclaren Scholar in Mathematics, and late Neil Arnott Scholar in Natural Philosophy.[1]

R. A. Lundie, M.A., Tyndall Bruce Mathematical Scholar.

Archibald L. Macleish, M.A., Gray Scholar.

Wm. W. J. Nicol, M.A.[2]

Charles E. Greig, M.A.

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[1] Author of the *Algebra of Logic*, and Examiner in Mathematics in the University of Edinburgh.

[2] Lecturer on Chemistry, Mason College, Birmingham.